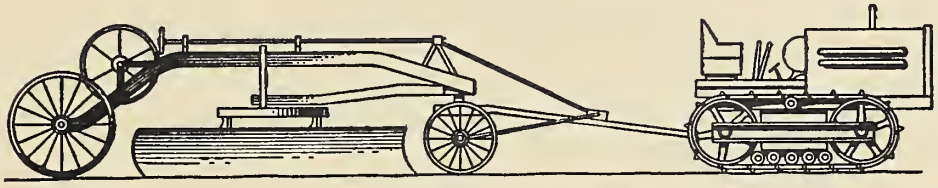
# CONSTRUCTION HINTS



UNITED STATES DEPARTMENT OF AGRICULTURE, FOREST SERVICE
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## LUBRICATION GUIDE

This Guide is based on recommendations from the equipment manufacturers and the oil companies. Additional copies are available on request.

The list of trade names on page 6 does not contain the products of all oil companies, but the information available will make it a comparatively simple matter to extend the list to include lubricants of the types indicated that are available from local companies in your area. Also, the types of lubricants listed were held to a comparatively small number for the sake of reasonable simplicity. To attempt to list every one of the hundreds of types and grades would result in such complication that it would be unusable.

A diesel fuel specification is furnished on page 5. There may be a few localities where fuel conforming to this specification cannot be obtained readily, in which case minor or slight deviations are acceptable.

Tests recently conducted have indicated that it is desirable to have special doped oils available for Caterpillar Diesel units only, and it is hoped that such oil will soon be on the schedule.

# FOREST SERVICE
# U. S. DEPT. OF AGRICULTURE
# LUBRICATION GUIDE
# AND
# DIESEL FUEL SPECIFICATION

Lubricants are used to reduce the friction between moving surfaces, and to conduct excessive frictional heat from the lubricated parts, preventing overheating. The probability of metal-to-metal contact depends on various factors, some of which are the materials, the operating conditions, and the finish of the surfaces themselves. It is usually not economical to construct equipment to such precision that, even with proper lubricants, actual metal-to-metal contact is always prevented.

The purchase of machinery equipped with "anti-friction" bearings in preference to plain bearings is made with the expectation that the increase in efficiency of operation and saving of fuel (required for power) will more than offset the increased initial cost. Without correct lubrication the net result may be a possible increase, rather than decrease, in expense.

Lubrication is a small item of expense compared with losses due to unnecessary friction, expensive repairs and lengthy shut-downs, in addition to increased equipment depreciation, as is the case when unsuitable lubricants are used.

While it is wasteful to use an expensive lubricant with properties unnecessary for a particular service, it may be more costly to use an inferior product where a high quality lubricant is required.

With a knowledge of the fundamental properties of the various lubricants, and the selection of a lubricant with due consideration to the operating conditions, a more economical operation of equipment should result.

Lubricating qualities of an oil depend, to a large extent, on its viscosity at operating temperature. For some classes of equipment the temperature variation when operating and not operating may not be appreciable.

Viscosity is important in cylinder lubrication in gasoline and Diesel motors, both at operating temperatures and when the motor is cold. The oil must be heavy enough at operating temperature to seal the clearance between piston rings and cylinder walls, and thus insure low fuel and oil consumption as well as full power. If too thin it will permit excessive blow-by, lost power, overheating, and will promote heavy carbon deposits because of oil-pumping. It should be thin enough, when cold, to provide instant lubrication to all parts when they are first started. This is generally accepted as being the most critical period of machine operation.

An oil with a high viscosity index (paraffin base) is best suited to meet extreme temperature ranges as it will "thin out" less under heat

and will "thicken" less when cooled. In other words, the body remains more nearly the same under a given temperature range than an oil of lower "V.I."

Under severe working conditions at high temperature where atmospheric temperature changes are not great, naphthenic-base oils, although having a low "V.I.", have proven satisfactory because of their greater volatility and lower carbon residue content. Such oils may, however, form excessive crankcase sludge.

Fixed (animal and vegetable) oils and mineral oils blended with fixed oils, are undesirable in engines because they tend toward rapid oxidation with sludging and sticking of engine parts. Also an acid condition tends to produce corrosion or pitting of the highly finished surfaces.

Because of the economy to be obtained from certain especially compounded lubricating oils, it is believed that it will be possible to purchase oils approved by the Caterpillar Tractor Company (such as R.P.M., Diesel Lubricating Oil, Ten-ol and others) on Navy contracts. These oils for Caterpillar Diesel motors are furnished in S.A.E. 30 and 20 grades. Such oils, however, will corrode other than babbitt bearings rapidly. Never use these oils except in Caterpillar diesel motors.

Viscosity is important in "anti-friction" bearings because an excessively thin oil is easily dissipated by atomization and vaporization caused by heat and high rotative speeds of the individual parts. An oil that is too heavy, on the other hand, causes excessive fluid friction, and in turn, higher operating temperatures. Ball and roller bearings should not be subjected to temperature ranges in excess of 300° F. because of the danger of ruining the temper of the heat treated parts. Proper lubrication is provided when housings of these bearings are half full. Excessive temperatures may be developed by churning of the grease when more than half full.

The chief advantage of greases is that they require less attention than oil and also insure some lubrication even if the bearing is neglected for a considerable time. Grease adheres to metal surfaces and is more suitable for slow moving assemblies. However the proper type is admirable for anti-friction bearings, where the use of oil is impracticable.

Equipment operating under dirty, dusty or wet conditions is better lubricated by grease as this acts as a sealing medium and prevents such foreign matter from reaching the bearing surfaces.

Worn or loose bearings are better lubricated with grease as it more effectively fills the clearance between journal and bearing.

Where rapid wear is the result of the entrance into the bearings of foreign material, as track rollers in a sandy locality, the length of life of such parts is materially lengthened if the period between grease applications is shortened. The frequent application of grease keeps forcing such material from the edges of the bearings, and more adequately prevents possible entrance. This is especially true of worn or loose bearings.

## CLASSES OF LUBRICANTS

| Greases | Characteristics | Suitable For |
|---|---|---|
| **Lime base**<br>Essential materials:<br>Calcium soap<br>Mineral oil<br>Water<br>Appearance:<br>buttery, smooth | Water-repellent. High temperatures and high speeds will evaporate or "throw-out" inherent water and grease will "break down". Oil leaks away and soap deposits remain. | Wet locations<br>Operating Temps. below 175° F.<br>Slow speed conditions<br>(High temp. will evaporate water)<br>(High speed or agitation may throw off water and cause grease to "break down".) |
| **Soda base**<br>Essential materials:<br>Sodium soap<br>Mineral oil<br>Appearance:<br>Fibrous or spongy; tacky | Not water-resistant. Has no inherent water to lose at high speeds or temperatures. | Dry locations only.<br>High operating temps.<br>Ball or roller bearings.<br>Centralized lubricating systems, where separation would clog lines. |
| **Aluminum base**<br>Essential materials:<br>Aluminum soap<br>Mineral oil<br>Appearance:<br>Transparent, buttery or stringy; non-fibrous. | Stringy types have good adherence to metals. Buttery types break down to very soft structure upon working. | Chassis lubrication.<br>Wet or dry locations.<br>High operating temperatures, and high speeds.<br>(subject to limitations; in general, a compromise where neither lime nor soda base satisfactory.) |
| **Extreme Pressure**<br>Essential materials:<br>Lead soap<br>Mineral oil<br>Chlorine or chlorine products<br>Sulphur, etc. | Have property of withstanding extremely heavy loads on gear teeth. | Automotive hypoid, worm, and heavily-loaded spiral bevel gears. Steering gears, etc. |
| **Residuum Greases** (non-soap)<br>Essential materials:<br>Heavy oil, asphalt, rosin, etc. | Excellent adhesiveness. | Exposed gears, cables, wire ropes, etc.<br>(Usually applied hot) |
| **Special Grease** (asbestos filler)<br>Essential materials:<br>Mineral oil and filler. (There are many fillers used. The type listed on page 6 has shredded or pulverized asbestos.)<br>Appearance:<br>Tacky, adhesive, fibrous. | Forms a seal at bearing ends which tends to keep dirt out and lubricant in the bearing. | Worn plain bearings where leakage is a factor. Plain bearings in tractor track rollers, stone and gravel plant installations. Not recommended for anti-friction bearings. |

## NAVY SCHEDULE OILS

### NAPHTHENIC BASE

Contractor.....Texas Company

| Navy Contract Item No. | New Symbol No. | S. A. E. Number For Engines | S. A. E. Number For Transmissions and Differentials | Pour point F. max. (As furnished) | Recommended Use |
|---|---|---|---|---|---|
| 1 | 2075 | - | - | -10 | V.I. of approxim. 40. Bearings and general exterior lubrication, for hydraulic pumps and systems and for flushing purposes. For gasoline and Diesel engines only where proven successful. |
| 2 | 2110 | 10 (10W) | - | 0 | |
| 3 | 2135 | 20 | - | 0 | |
| 4 | 2190 | 30 | - | 35 | |
| 5 | 2250 | 40 | - | 35 | |

### MID-CONTINENT PARAFFIN BASE

Contractor .....Texas Company

| | | | | | |
|---|---|---|---|---|---|
| 6 | 3050 | 20 (20W) | 80 (low)* | 0 | V.I. of approx. 75 for air compressors, tractors, power units, gearboxes, and general use. For automotive transmissions, differentials under favorable conditions. Can be thinned with No. 9045 or kerosene to lower pour points. (This also reduces viscosity). |
| 7 | 3065 | 30 | 80 (med.)* | 5 | |
| 8 | 3080 | 50 (low) | 90 (low)* | 15 | |
| 9 | 3100 | 50 (high) | 90 (high)* | 25 | |
| 10 | 3120 | 60 | 110 (low)* | 30 | |

* These oils do not meet S.A.E. channelling point requirements and should not be used for automotive transmissions or differentials except when prevailing temperatures are higher than the given pour point.

### PENNSYLVANIA BASE

Eastern Contractor - Sinclair Ref. Co.
Western Contractor - Texas Company

| | | | | | |
|---|---|---|---|---|---|
| 11 | 1080 | 50 (low) | 90 (low) | 5 | V.I. of approx. 95. Automotive and aviation. Can be thinned with kerosene or # 9045 for lower pour points. (This also reduces viscosity). |
| 12 | 1100 | 50 (high) | 90 (high) | 5 | |
| 13 | 1120 | 60 | 110 (low) | 5 | |
| 14 | 1150 | 70 | 110 (med) | 10 | |

### Mineral oils (transmission lubricants)

Contractor -----Texas Company

| | | | | | |
|---|---|---|---|---|---|
| 18 | 5190 | - | 160 | 60 | Enclosed differential gears, transmission, etc. For use where temperatures never fall below 60° F. See FS-04. |

### Transformer Oil

Contractor - Westinghouse

| | | | | | |
|---|---|---|---|---|---|
| 22 | 9045 | - | - | -30 | See below |

For transmissions and differentials at temperatures 0° to 15° below zero use a mixture of 70% by volume, of 3050 oil and 30% by volume of No. 9045 transformer oil.
For a flushing oil use 2075.

## DIESEL ENGINE FUEL

The Diesel engines used on Forest Service tractors, shovels and other construction equipment are classified as the "small high speed type" and fuel for use in these engines should be ordered as "high speed Diesel fuel" and not as a fuel oil, as there may be a great difference in ignition or combustion quality and cleanliness.

On projects having two or more different makes of Diesel engines it is desirable to obtain a single fuel for both. Fuel complying with the following specification, or closely approximating it, will be found suitable for all Diesel equipment on Forest Service Projects.

Too few operators appreciate the serious nature of traces of dust and dirt admitted with the fuel. Obviously the main danger is not the coarse dirt, which the fuel filters can remove readily. The real damage is caused by the very fine, practically invisible, particles which get through the filters and between the close fitting surfaces of the parts comprising the injection system. These particles act as lapping agents and rapidly wear the pump mechanism.

Specifications for Diesel fuel:

(It is believed all of the major sources of supply have readily available a standard grade meeting these requirements).

| | |
|---|---|
| Flash Pt. (closed cup), min. | 150° F. |
| Sulphur - max. | 1.0% |
| Carbon residue - max. | 0.10% |
| Ash - max. | 0.02% |
| Visc. at 100° F., Say. Univ. | 35/45 |
| Water & Sediment - max. | 0.02% |
| Pour Point - max. | (30° F. summer<br>( 0° F. winter |
| Distillation, min. | 10% at 475° F. |
| " min. | 90% at 700° F. |
| " final (end point), max. | 730° F. |
| Diesel Index, min. | 40 |

## TABULATION OF TRADE NAMES OF VARIOUS TYPES OF LUBRICANTS

| Selected for convenience in identifying types. Designation | Type | Viscosity or penetration range | Standard Oil Cos. of N. J. Penna., La., Colonial Beacon Oil Co. | D-A Lubricants Co. | Texas Co. | Gulf Ref. Co. | Keystone Lubricating Co. | Standard Oil Co. (Indiana) | Standard Oil Co. of California |
|---|---|---|---|---|---|---|---|---|---|
| FS-01 | Light oil | 440 210° F. | Zerice 44 | - | Cetus oil | Eskimo B | - | - | RPM Motor Oil SAE 10 |
| FS-02 | Extreme pressure | SAE 90-160 | Penola Comp. | - | Texas Ex. Pres. Lub. | Gulf EP | No. 73 | Stanogear | - |
| FS-03 | Extreme pressure (hypoid) | SAE 90 | Essoleum Expee Comp. SAE 90 E.P. | - | Texas Hypoid | Gulf Hypoid | Hypoid Gear | - | Special Hypoid Gear Lub. SAE 90 |
| FS-04 | Transmission & differential lub. | SAE 90-110 160 | Essolube Gear Oil SAE 90-160 | - | Thuban Compound 90-160 | Trans. Gear-lube 90-160 | 73 W 80-90 | - | RPM Trans. & diff. lub. 90-160 |
| FS-G1 | Lime base | 300 | Castroleum 0 | - | Star Grease 00 | Supreme Cup No.1 | Cup Grease Soft No. 3 | Superla No. 42 | - |
| FS-G2 | Lime base | 200 | Castroleum 2 | - | Star Grease No.3 | Supreme Cup No.2 | Medium No. 2 | Cataract No. 52 | RPM Cup Grease |
| FS-G3 | Soda base | Over 360 | Essoleum A-4 | - | Marfak No. 1 | Triplex Lubricant | - | - | RPM Cup Grease |
| FS-G4 | Soda base | 200 | Essoleum B | - | Marfak No. 3 | Gulf H.M. Grease | - | - | RPM Wheel-bearing Grease |
| FS-G5 | Base as indicated | - | Essoleum Chassis Lubricant (lime) | - | Marfak Nos.1-2 (Soda) | Gulf Chassis (Lime)Summer (Alum)Winter | - | - | RPM Chassis Grease |
| FS-G6 | Non-soap | Winter type | Surrett Compound 800 (Apply hot). 290 (apply cold). | - | Crater Comp.0 | Lubcote Medium (apply hot) | Wire Cable Grease (apply cold) | Calumet Comp.No. 6 | Calol Pinion Grease No. 0 |
| FS-G7 | Non-soap | Summer type | Surett Comp. 1100 (apply hot) | - | Crater Comp. 1 (ap. hot) | Lubcote heavy (ap.hot) | No. 114 medium | Calumet Comp. no. 7 | Calol Pinion Grease No.1 |
| FS-G8 | Asbestos filler | - | Penola Tractor lub. S-70 | DA No.1 | - | - | - | - | - |
| FS-G9 | Asbestos filler | - | Penola Tractor lub. S-110 | DA No.2 | - | - | - | - | - |
| FS-WP | Lime base | - | Essoleum Waterproof grease | - | Texaco Water Grease | Water Pump Grease | Water Pump Grease | Polarine WP Grease | RPM Waterproof grease |

Note: The lubricants listed on page 6 are general purpose grades. Most of these lubricants may be obtained from the manufacturer in a heavier or lighter grade, as may be required for unusual conditions.

FS-01 - A light oil of low pour point (-20° F) suitable for cold weather operation of hydraulically controlled equipment and air drills.

FS-02 - An extreme pressure lubricant suitable for automotive equipment requiring a lubricant of this type, but not intended for hypoid gears.

FS-03 - A hypoid lubricant for automotive hypoid rear-axle gears.

FS-04 - A summer lubricant having a low channeling point for automotive transmissions and differentials.

FS-G1 - A lime base, water-resistant grease, suitable for grease guns, for plain and anti-friction bearings at normal speeds and temperatures.

FS-G2 - Similar to G1, but of heavier consistency suited for screw down cups.

FS-G3 - A soda base grease for normal or abnormal temperatures and speeds under dry conditions, suitable for plain and anti-friction bearings, gear boxes and power transmissions.

FS-G4 - Similar to G3, but heavier, for wheel bearings, etc.
FS-G5 - Chassis lubricants for grease guns. (Different manufacturers use different bases).
FS-G6 - A non-soap grease for heavy exposed gears and wire ropes usually for hot application. Be sure all old grease is removed before application.

FS-G7 - Similar to G6, but heavier, for warm weather operation (usually applied hot).

FS-G8 - An asbestos filled lubricant, for loose and worn plain bearings and where leakage is a problem (not suitable for anti-friction bearings).

FS-G9 - Similar to G8 but heavier grade (not suitable for anti-friction bearings).

WP - A waterproof grease for water pumps.

EQUIPMENT

NOTE: Use oil and grease of type recommended by manufacturer. The following recommendations conform to usual grades for new or overhauled equipment. After considerable use, it may be advisable to use oil of next higher viscosity number.

FS-04, a transmission and differential lubricant, recommended for summer operation generally. Where the seasonal temperature range is not great enough to require a lower pour point oil Navy oils 5150 and 5190 are to be preferred. Pour point of Navy oils 5150 and 5190 is 60° F which may be lowered by adding Navy oil 9045 which has a pour point of -30° F.

"Permanent lubrication" is a term applied to anti-friction bearings on horizontal shafts on some equipment, that is, they require lubrication only about every six months. At this time all old grease should be flushed out with a light oil before refilling.

All four figure numbers refer to Navy Contract oils. All lettered numbers refer to table of trade names, page 6.

| | SUMMER (Above 40° F) | WINTER (Below 40° F.) |
|---|---|---|
| **AIR COMPRESSORS** | | |
| Engines | 3065 | 3050 |
| Compressor Cylinders | 3065 | 3050 |
| **AUTOMOBILES** | | |
| Engine: | | |
| Chevrolet | 3065 | 3050 |
| Ford | 3080 | 3050 |
| Graham | 3065 | 3050 |
| Pontiac | 3050 | 3050 |
| Transmission: | | |
| Chevrolet | 1100 | 1100 |
| Ford | 04-5190 | 1100 |
| Graham | 04-5190 | 1100 |
| Pontiac | 04-5190 | 1100 |
| Differential: | | |
| Chevrolet | 03 | 03 |
| Ford | 02 (SAE 160) | 03 |
| Graham | 02 (SAE 160) | 03 |
| Pontiac | 04-5190 | 1100 |
| Steering Gear Housings | 02 (SAE 160) | 02 (SAE 110) |
| Universal Joints | G4 | G4 |
| Water Pumps | | |
| Ford '37 | 3065 | 3065 |
| Others | WP | WP |
| Wheel Bearings | G4 | G4 |
| Other Chassis Points | G5 | G5 |

| | SUMMER (Above 40° F) | WINTER (Below 40° F) |
|---|---|---|
| **CONCRETE MIXERS** | | |
| Engines | 3050 | 3050 |
| Journal Bearings Plain (Gun type) | G5 | G5 |
| Journal Bearings Plain (Screw cup) | G2 | G2 |
| Journal Bearings Anti-friction | G1 | G1 |
| Open Gears | G7 | G6 |
| Closed Gears | 04-5190 | 3100 |
| **CRUSHER UNITS - GENERAL** | | |
| Tractor Type | | |
| Pitman and side bearings | 3065 | 3065 |
| Drive Pulley bearings | G1-G8-G9 | G1-G8-G9 |
| Plants | | |
| Engines (see power units) | | |
| Crushers & Pitman: roller bearings | G4 | G4 |
| Conveyors: elevators, anti-friction | G4 | G3 |
| Conveyors: elevators, plain | G1-G8-G9 | G1-G8-G9 |
| Screen: anti-friction bearings | G4 | G3 |
| Screen: plain bearings | G1-G8-G9 | G1-G8-G9 |
| (Some manufacturers have permanently lubricated anti-friction bearings on horizontal shafts - grease every six months). | | |
| **MOTOR PATROLS** | | |
| Chassis Points | G5 | G5 |
| Engine: | | |
| Caterpillar Diesel | RPM Diesel (SAE 30) | RPM Diesel (SAE 20) |
| Others | 3080 | 3050 |
| Gears (open) | G7 | G6 |
| Hydraulic Cylinders | 3065 | 3050 |
| Transmissions, Final Drives | 04-5190 | 1100 |
| Universal Joints | G4 | G4 |
| Water Pumps | WP | WP |
| Wheel Bearings | G4 | G4 |
| **POWER UNITS** (For large equipment) | | |
| Air cleaners (General) | 3080 | 3080 |
| Starting motors & generator bearings | 3050 | 3050 |
| Gasoline Engines (General) | (3065 or 3080 (2190 or 2250 | (3050 or 3065 (2135 or 2190 |
| Diesel Engines | | |
| Allis-Chalmers (Crankcase) | 3080 | 3065 |
| Buda (Crankcase) | 3065 | 3050 |
| Caterpillar (Crankcase) | (RPM Diesel (SAE 30) (3065 or 2190 | (RPM Diesel (SAE 20) (3050 or 2135 |

| | SUMMER (Above 40° F.) | WINTER (Below 40° F.) |
|---|---|---|
| Diesel Engines (cont.) | | |
| Caterpillar (cont.) | | |
| Starting engine (gasoline) | 3065 or 3080 | 3050 |
| Crank sprocket shaft bearing | G5 | G5 |
| Cummins (Crankcase) | 3080-3065 | 3050 |
| Hercules (Crankcase) | (Macmillan Ring-free (2190 | (Macmillan Ring-free (2135 |
| International Harvester (Crankcase) | 3065 | 3050 |
| Air cleaner | 3080 | 3080 |
| Fuel injector pump | 3050 | 3050 |
| Magneto Coupling | (Three-in-one (9045 | (Three-in-one (9045 |
| ROCK DRILLS | | |
| Grease Pocket Type | G2 | G2 |
| Line Lubricators | 2110 | 01 |
| SHOVELS & DRAGLINES (General) | | |
| Engines (See Power Units) | | |
| Enclosed Gears | 3100 or 3120 | 3050 or 3080 |
| Open Gears, racks, wire rope, etc. | G7 | G6 |
| Plain bearings, grease | wet, G2; dry, G4 | wet, G2; dry, G4 |
| Roller bearings, grease | wet, G1; dry, G3 | Wet, G1; dry G3 |
| Boom Point sheaves, plain bearings - anti-friction | G2 G4 | G2 G4 |
| Bearings, pins, links, lever joints, etc. - oil can | 3065 to 5190 | 3050 to 3120 |
| Universal joints | G4 | G4 |
| SHOVELS - LINK BELT | | |
| Engines (See Power Units) | | |
| Bevel Gear Reservoir | 02 (SAE 110) | 02 (SAE 90) |
| Drive Axle Reservoir | 02 (SAE 110) | 02 (SAE 90) |
| Silent Chain Casing | 02 (SAE 110) | 02 (SAE 90) |
| All high pressure fittings | G5 | G5 |
| All open gears | G7 | G6 |
| SHOVELS - OSGOOD | | |
| Engine Crankcase | 3065 | 3065 |
| Control Units | 3065 | 3050 |
| Crowd Units | 04-5190 | 3080 |
| Anti-friction bearings | G4 | G4 |
| Plain bearings | wet, G2; dry G4 | wet, G2; dry, G4 |
| Exposed gears | G7 | G6 |
| SHOVELS - SPEEDER | | |
| Engine (See Power Units) | | |
| Grease tight cases | 04-5190 | 3120 |
| Silent chain, crowd chain | 3050 | 3050 |
| Alemite fittings | G5 | G5 |
| Open gears | G7 | G6 |

| TRACTORS | SUMMER (Above 40°F.) | WINTER (Below 40°F.) |
|---|---|---|
| Engine (See Power Units) | | |
| **Allis-Chalmers:** | | |
| Final Drive | 04-5190 | 1100 |
| Transmission | 04-5190 | 1100 |
| Track Wheels, Front Idlers, Equalizer, Crank Bearings, Slide Shaft Bearings, Inner Crank Bearings, Supporting Rollers, Inner Crank Slide, Bracket Bushings | 04-5190 | 1100 |
| Other Chassis Parts | G5 | G5 |
| **Caterpillar:** | | |
| Power Transmission | | |
| Final drive case | 04-5190 | 1120 |
| Flywheel clutch collar shaft - | | |
| Model 20, 25, 28, 30, 60 | G5 | G5 |
| Model 35, 40, 50, RD4, RD6, RD7, RD8, Diesel 40, Diesel 50, Diesel 75 | 04-5190 | 1120 |
| Flywheel clutch release bearing - | | |
| Model 10, 15, 22 | 3080 | 3050 |
| Model 60 | G5 | G5 |
| Transmission cases - all models | | |
| except 60 | 04-5190 | 1120 |
| Model 60 bevel gear compart. | 3080 | 3050 |
| Model 60 speed change compart. | 04-5190 | 1120 |
| Steering clutch control lever sleeve - | | |
| Model 30, 60, 70, RD4, RD6, RD7, RD8, Diesel 50, Diesel 75 | G5 | G5 |
| Steering clutch release bearing | 3080 | 3050 |
| Chassis | | |
| Brake Pedal shaft | G5 | G5 |
| Front idler sprocket - Model 10, 15, 22, 28, 40, 50, RD4, RD6, RD7, RD8, Diesel 40, Diesel 50, Diesel 75 | 04-5190 | 1120 |
| Model 20, 25, after No. 3C450, 35 after No. 5C653, 60 | G5 | G5 |
| Track Carrier rollers - | | |
| Model 28, 40, 50, 70, RD4, RD6, RD7, Diesel 40, Diesel 50, Diesel 75 | 04-G8-G-9 | 3080-G8-G9 |
| Model 35 (No. 5C1 to 5C652 inc.) 25 (No. 3C1 to 3C450 inc.),30,60 | G5 | G5 |
| Track rollers - Models 10, 15, 22, 25, 28, 35, 40, 50, 70, RD4, RD6, RD7, RD8, Diesel 40, Diesel 50, Diesel 75 | 04-G8-G9 | 3080-G8-G9 |
| Models 20, 25, (No. 3C1 to 3C450 inc.), 30, 35, (No. 5C1 to 5C652 inc.), 60 | G5 | G5 |
| Track roller frame bearing | G5 | G5 |

For wet locations the roller assemblies may be lubricated with a light lime base grease.

| | SUMMER (Above 40° F.) | WINTER (Below 40° F.) |
|---|---|---|
| TRACTORS (Cont.) | | |
| Cletrac: | | |
| Fan (oil type) | 3080 | 3080 |
| Fan (grease type) | G4 | G4 |
| Air cleaners | 3080 | 3080 |
| Magneto | 3050 | 3050 |
| Distributor | G4 | G4 |
| Water Pump | WP | WP |
| Water pump (BD) | 3080 | 3080 |
| Power transmission | | |
| Transmission & Final Drive | 3100 | 3065 |
| Clutch collar shaft | G4 | G4 |
| Track Wheel system (all types) | 3100 | 3050 |
| Chassis | | |
| Spring trunnions | 3080 | 3080 |
| Other grease lubrication | G4 | G4 |
| International Harvester: | | |
| Fan Hub | 04-5190 | 5150 |
| Water Pump | 04-5190 | 5150 |
| Air cleaners | 3065 | 3050 |
| Clutch release bearings | 04-5190 | 5150 |
| Transmission & Final Drive | 04-5190 | 1120 |
| Front idlers & track rollers | 04-5190 | 1120 |
| Alemite push type fittings | 04-5190 | 1120 |
| TRAILERS AND TRUCKS | | |
| Engine: | | |
| FWD | 3080 | 3050 |
| GMC | 3080 | 3050 |
| International | 3080 | 3050 |
| Kenworth | 3080 | 3050 |
| Reo | 3065 | 3050 |
| Walter | 3080 | 3050 |
| Transmissions, Transfer Units: | | |
| Differentials | | |
| FWD | 02 (SAE 160) | 02 (SAE 110) |
| GMC | 04-5190 | 1120 |
| International | 04-5190 | 1100 |
| Kenworth | 04-5190 | 1100 |
| Reo | 02 (SAE 160) | 02 (SAE 110) |
| Walter | 04-5190 | 1120 |
| Universal Joints: | | |
| Oil-type | 04-5190 | 1120 |
| Grease-type | G4 | G4 |
| Wheel bearings | G4 | G4 |
| Water pump bearings (grease type) | WP | WP |
| Chassis points | G5 | G5 |
| Steering Gear Housings | 02 | 02 |
| WELDERS | | |
| Engines & generator bearings | 3050 | 3050 |
| Grease points | G4 | G4 |